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Late Blight of Potatoes

This disease may occur on potatoes as either a leaf and stalk blight or as a tuber rot. Both are due to the same fungus *(Phytophthora infestans)* the tuber rot being always the direct result of previous top infection.

The disease is very rapid in development if conditions are favorable and the few initial spots soon become so large that they include the whole leaf or even the stalks as well. The spots have a watersoaked appearance at first, but as the tissues are quickly killed by the fungus affected parts soon wither, turn black and dry up. An offensive odor is often associated with blighted plants in moist conditions.

While the leaves are still in the early stages of blight, there may be noticed on their under surfaces a light downy coating consisting of thousands of delicate filaments bearing spores. It is these spores which spread the blight to other plants and they are so numerous and spread about so readily in air currents that blight seems to spread like a fire once it is started.

INFLUENCE OF WEATHER

The blight fungus requires very moist conditions for its development. A breath of hot dry air shrivels and destroys the spore stalks and their spores and dry air prevents spore germination on the leaves. For this reason, blight is utterly dependent on weather conditions and will be absent or severe according as the weather is dry or moist. Sometimes blight starts in moist, rainy days and then dies out or ceases to spread in succeeding dry sunny weather.

Spores that fall from the tops to the soil may bring about tuber rot and as soon as the fungus appears on the tops, tuber rot may be expected to follow as a matter of course. The amount of rot developing in the tubers will depend on the lateness of top infection, the amount of it and soil moisture. Late blight tuber rot starts as a purplish, irregular and indefinite patch on the surface. As it progresses the flesh develops a soft rot with a very offensive smell. Potatoes showing the early stages of this tuber rot are likely to decay quickly in storage if kept too warm. In cool, dry storage, the rot areas may cease to develop further and the injured portion may dry up. With the coming of spring and warmer temperatures, the fungus may again become active and destructive.

Potatoes dug when the tops are still blighting badly are likely to become infected by the innumerable spores brushed from the tops and may rot badly in storage. If storage is at a low temperature, such incipient rot spots may not develop until the storage temperature rises in spring. Although measures taken at digging time will have no effect on tuber infections started during the earlier period of blight attack, yet it usually pays to avoid this further tuber infection that may occur in digging operations by either waiting till the tops are entirely dead before digging, or by getting rid of the tops completely a few days before one starts to dig. This can be done by mowing and raking off the tops, but it is preferable to spray them thoroughly with bluestone, (1 pound to 12 gallons). The bluestone solution not only kills the tops, but destroys all the spores it reaches. It should be emphasized that in all cases where active blight has been present, it is advisable to dig only after a day or two of dry weather to allow for the death of as many as possible of the short-lived spores. A heavy frost which kills the tops also destroys the blight fungus in them and after the vines are dead from frost, danger of digging infection is over.

CONTROL

The late blight fungus is so dependent on weather conditions and spreads so rapidly that selection of blight-free seed has little value in blight control. Tubers showing blight rot should never be planted, however, because they are sure to rot and cause misses.

Late blight and its attendant tuber rot can not be cured; they must be prevented by spraying. Long experience and much investigation have proved that Bordeaux mixture (See Cir. 11 enclosed) is the best spray material to use for late blight. The first application should be made when the plants are six inches high and further sprayings should be given at intervals of from ten days to two weeks during the growing period. From five to seven applications or more will be necessary during the season. To make these applications so thorough that every part of the leaves and stalks will be covered by the fine spray mist it is necessary to use a high pressure outfit and to spray from the top and sides of the row.

Even in years when blight is not prevalent it pays to spray for the reason that the spray material has a protective or stimulating effect on the foliage and thus induces a higher yield. As a general rule, this increase in crop will in itself pay for the spraying.